# AN OPTICAL COMPONENT COMPRISING A SPOT SIZE CONVERTER AND A METHOD OF ITS MANUFACTURE

## ABSTRACT

The invention relates to an optical component (1) comprising a combination of optical waveguide elements for modifying the spot size of a mode of an electromagnetic field propagated by an optical waveguide element, the optical waveguide elements being formed on a substrate. The object of the present invention is to provide a mode coupler with low coupling loss that is easy to manufacture and process tolerant. The problem is solved in that the optical component further comprises a) a first section (10), comprising a first optical waveguide element (11) adapted to sustain at least one mode of the electromagnetic field, b) a second section (20) comprising at least two cooperating optical waveguide elements (21, 22), each of said at least two cooperating optical waveguide elements comprising at least one waveguide segment, said at least two cooperating optical waveguide elements being optically connected to said first optical waveguide element of said first section; wherein said cooperating optical waveguide elements (21, 22) of said second section (20) are adapted to maintain optical coupling between said optical waveguide elements to ensure that said at least one mode of the electromagnetic field is sustained by said at least two cooperating optical waveguide elements in cooperation. Preferably, the waveguides of the first and/or second sections are tapered according to a cosine function or to a $5^{th}$ or $7^{th}$ order polynomial. An advantage of an optical component according to the invention is that it provides a mode size converter that is relatively simple to manufacture in that it requires no extra process steps. A further advantage is that it is readily suitable for integration with other optical circuitry on a common substrate. The invention may be used in optical communication systems (e.g. systems employing WDM) where coupling of light between integrated optical circuits and optical fibres are needed.

(Fig. 3 should be published)